CLAIMS

What is Claimed is:

1. A fuel cell comprising:

a first bipolar plate including flow channels;

a second bipolar plate including flow channels; and

a membrane formed between the first and second bipolar plates, wherein the first and second bipolar plates are extruded bipolar plates where the flow channels are formed by an extrusion process.

2. The fuel cell according to claim 1 wherein the flow channels in the first and second bipolar plates are selected from the group consisting of square, rectangular, trapezoidal, round, sinusoidal and elliptical shaped flow channels.

3. The fuel cell according to claim 1 wherein the flow channels include flow channels for a cooling fluid.

4. The fuel cell according to claim 3 wherein the flow channels extend through a middle portion of the first and second bipolar plates.

5. The fuel cell according to claim 1 wherein the flow channels include anode flow channels and cathode flow channels.

6. The fuel cell according to claim 5 wherein the anode and cathode flow channels are provided at outside edges of the first and second bipolar plates.

7. The fuel cell according to claim 1 wherein the first and second bipolar plates include recessed edges.

8. The fuel cell according to claim 7 further comprising end plates positioned in the recessed edges for securing the first and second bipolar plates together.

9. The fuel cell according to claim 1 wherein the first and second bipolar plates are extruded aluminum plates.

10. The fuel cell according to claim 1 wherein the fuel cell is for an automotive application.

11. A bipolar plate for a fuel cell, said bipolar plate comprising a series of flow channels extending through the plate, said bipolar plate being an extruded bipolar plate where the flow channels are formed by an extrusion process.

12. The bipolar plate according to claim 11 wherein the flow channels are selected from the group consisting of square, rectangular, trapezoidal, round, sinusoidal and elliptical shaped flow channels.

13. The bipolar plate according to claim 11 wherein the flow channels include flow channels for a cooling fluid.

14. The bipolar plate according to claim 11 wherein the flow channels include anode flow channels and cathode flow channels.

15. The bipolar plate according to claim 11 wherein the flow channels extend through a middle portion of the plate.

16. The bipolar plate according to claim 11 wherein the flow channels are provided at outside edges of the plate.

17. The bipolar plate according to claim 11 further comprising recessed edges.

18. The bipolar plate according to claim 11 wherein the plate is an extruded aluminum plate.

19. A method for fabricating a bipolar plate for a fuel cell, said method comprising:

providing an extrusion device;

extruding a stream of a metal through the extrusion device so that the stream includes flow channels extending therethrough; and

cutting the stream to form the bipolar plate having flow channels.

20. The method according to claim 19 wherein extruding the stream includes forming the flow channels through one or both of a middle portion of the stream and edges of the stream.

21. The method according to claim 19 wherein extruding the stream includes forming recesses in side edges of the stream.